1/2 014 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--FORMATION OF THE THETA PHASE IN THE AGING OF A HIGH RESISTANCE ALLOY BASED ON A NICKEL MANGANESE INTERMETALIC COMPOUND -U-

AUTHOR--BOKSHITSKY, I.YA., YELYUTIN, O.P., SHIRENIN, V.I., USIKOV, M.P.

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UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0107679

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF CHANGES ASSOCIATED WITH AGEING AT 350DEGREESC ON THE STURCTURE AND PROPERTIES OF THE HIGH RESISTANCE NIMN-V-FE (QUASI TERNARY) ALLOY NG45F WAS STUDIED, WITH SPECIAL REF. TO THE FORMATION OF THE THETA PHASE. THE ELECTRICAL RESISTANCE WAS MEASURED AS A FUNCTION TIME AND CORRELATED WITH THE PHASE COMPOSITION, AS REVEALED BY X RAY ANALYSIS. THE RESISTANCE REACHED A MAXIMUM AFTER 5-6 H, DEPENDING ON THE PREVIOUS HEAT TREATMENT. THE THETA PHASE HAD A STRUCTURE WITH THE CUAU I TYPE OF ORDERING.

UNCLASSIFIED

USSR

UDC 541.123.2:[546.621-31+546.45-31]:[532.6+542.3]

YELYUTIN, V. P., MITIN, V. S., and ANISIMOV, YU. S., Moscow Institute of Steel and Alloys

"Surface Tension and Density of Al_2O_3-BeO Melts"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, No 9, Sep 73, pp 1585-1587

Abstract: Researchers today are paying considerable attention to the study of the properties of liquid oxides of aluminum and beryllium because of the expanding use of powders from these metals and their alloys in solid rocket fuels. One of the main factors in this research is the determination of density and surface tension of oxides in the liquid state. The authors of this article established the concentration dependence of surface tension and density of liquid Al_2O_3-BeO melts. They measured the surface tension and density of pure aluminum oxide and melts of Al_2O_3 as a function of temperature. The values of surface tension of pure Al_2O_3 were found to be lower than that found previously. The value of the density of liquid aluminum oxide, equal to 3.03 g/cm^3, at the melting point is found to be in good agreement with previous data, but the temperature coefficient of the density is somewhat higher. The article contains 2 figures, 1 table, and 4 bibliographic references.

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USSR

UDC 536.46:533.6

YELYUTIN, V. P., MITIN, B. S., SAMOTEYKIN, V. V.

"Effect of High-Temperature Oxidation on the Ignition Characteristics of Slightly Dispersed Aluminum Powder"

V sb. Goreniye i vzryv (Combustion and Explosion -- Collection of Works), Moscow, "Nauka", 1972, pp 241-244 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B940)

Translation: An expression for the oxidation rate of slightly dispersed particles in the induction period is proposed on the basis of experimental studies made of aluminum oxidation. The expression obtained is used in calculations for the limiting conditions for ignition of aluminum as a function of particle size. The computational results are compared with data of other authors. Authors' abstract.

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USSR

UDC: 669.71.018.95:621.785.3

SMIRNOV, P. B., YELYUTIN, V. P., MOZZHUKHIN, Ye. I., Moscow

"Electrothermal Treatment of SAP Materials"

Izvestiya Akademii Nauk SSSR, Metally, No 4, Jul-Aug 73, pp 205-208.

Abstract: In this work, an attempt was made to introduce oxygen to the aluminum matrix of SAP by electrothermal treatment with direct current. The treatment of the SAP caused the introduction of point defects to the aluminum matrix, which increased the stability of the dislocation structure. The point defects have significant thermal stability.

USSR

YELYUTIN, V. P., KOSTIKOV, V. I., and KHARITONOV, A. V., Moscow Institute of Steel and Alloys

"The Effect of Surface Active Media on Free Surface Energy of Pyrographite"

Moscow, Doklady Akademii Nauk SSSR, Vol 202, No 1, Jan-Feb 72, pp 106-108

AbstractL Surface active media lower free surface energy of solid bodies resulting in a decrease of their strength. This study was aimed to give experimental proof that the lowering of this strength is of the adsorptive nature and that the strength of a solid body is directly connected to the surface energy. The pyrographite studied was obtained at a temperature of 2100° and calcined at 3000°C for one hour. The surface active medium consisted of ethanol-water mixture. Preliminarily it was shown that water has no effect on the of the pyrographite, probably because it is incapable of wetting its surface. T On the other hand, addition of alcohol to water lowered the free surface energy of pyrographite. The adsorption isotherm G was calculated from Gibbs equation and was found to reach a maximum at 4.2 mole/l of ethanol concentration. To find the relationship between the free surface energy and strength, a sample of pyrographite was split in air, a 0.1 mm slit was marked on its surface, and the specimen immersed in water and in ethanol-water mixture. Again no effect

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YELYUTIN, V. P., et al., Doklady Akademii Nauk SSSR, Vol 202, No 1, Jan-Feb 72, pp 106-108

was noted after water immersion, but the slit widened immediately in the aqueous ethanol medium. Thus the adsorption nature of the lowering of pyrographites's surface energy under the influence of aqueous alcohol has been shown experimentally.

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USSR

UDC 621.3.035.2

YELYUTIN, V. P., KOSTIKOV, V. I., DERGUNOVA, V. S., SHURSHAKOV, A. N., POSOS'YEVA, G. D., LUTSENKO, L. N.

"Specifics of Saturation of Porous Graphite Bases with Melted Zirconium"

Tsvetnye Metally, No 1, 1971, pp 46-50.

Abstract: Certain regularities involved in the process of capillary saturation of various porous graphite materials with liquid zirconium are studied. An attempt is made to determine experimentally the apparent activation energy of the process and to determine the influence of individual factors on various stages of the process. The experiments were performed in a specially designed high-temperature installation under a vacuum of $2 \cdot 10^{-2}$ mm hg. The experiments showed that the melt flows energetically over the outer surface of specimens, thus producing elevated capillary rise values on specimens less than 60 mm in diameter due to additional penetration of the melt through side surface pores. Penetration of porous graphite materials with liquid zirconium occurs by flow of the zirconium along poor walls. The time dependence of movement of the saturation front under isothermal conditions forms a quadrativ parabola. The apparent activation of the process of saturation was calculated for type PROG-2400 and PG-50 graphites.

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Powder Metallurgy

USSR

UDC 669.24

YELYUTIN, V. P., MOZSHUKHIN, YE. I., REZNIKOV, YU. A., and KUL'GA, G. YA., Moscow Institute of Steel and Alloys

"Properties of Nickel Powder Containing Inclusions of Calcium Oxide"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 11, 1971, pp 132-135

Abstract: A study was made of the effect of the recovery temperature of mixtures of NiO and CaO powders and the content of CaO additive in the mixture on the dimension of coherent dispersion domains and micro-distortion of Ni in powders, reduced in a hydrogen current. With rising recovery temperature, micro-distortions of the crystalline lattice of Ni decrease, but the dimension of coherent dispersion domains changes nonmonotonously. The rising recovery temperature goes with an increase of the mean size of Ni-powder particles. The effect of the recovery temperature and inclusions of calcium oxide on the compressibility of bricks by pressing and caking was investigated. The compression degree of bricks by caking decreases with increasing dimension of coherent dispersion domains of Ni. Four illustrations, four bibliographic references.

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USSR

UDC 546.623-31:537.311

YELYUTIN, V. P., MITIN, B. S., and NAGIBIN, Yu. A., Moscow Institute of Steel and Alloys

"Electric Conductivity of Liquid Aluminum Oxide"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, Vol 7, No 5, May 71, pp 880-881

Abstract: An experimental determination of the electric conductivity of liquid aluminum oxide in the range of temperature from the melting point to 2800°C is described. Measurements were carried out in a vacuum and in a purified helium atmosphere by a voltmeter-ammeter with a molybdenum measuring cell. The experimental setup and measuring technique are briefly described. The results show that the values of the specific electric conductivity in a vacuum and in helium are the same. The electric conductivity increases with temperature while the activation energy of ion migration decreases with temperature, and in magnitude corresponds to the activation energy of silicate melts. It is concluded that $Al_2O_3 \rightarrow AlO_2 \rightarrow AlO^+$ is the most favorable scheme of liquid Al_2O_3 dissociation.

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USSR

UDC 546.26+66.022.4

YELYUTIN, V. P., ANIKEYEV, YE. F., KOSTIKOV, V. I., and LEVIN, V. YA., Moscow Institute of Steels and Alloys

"Impregnation of Compact Graphites With Melts of the System Silicon-Zirconium"

Moscow, Khimiya Tverdogo Topliva, No 1, Jan/Feb 71, pp 147-153

Abstract: The mechanism of impregnating graphites of the MPG (expansion unknown) class with liquid silicon had been studied previously. A dense composition of the type graphite-silicon -- carbide-silicon could be obtained in this way if one worked in oxidizing media and the temperature did not exceed the melting point of silicon; pure silicon always remained in the graphite pores. To avoid this disadvantage, alloys of silicon with some active element, which can interact with silicon and graphite, were used. In this case, it was found to be possible to bond the excess silicon which had not been changed into silicon-carbide, into some silicide. Two alloys were used in this study: Si+10% Zr and Si+ 25% Zr. The graphite sample was added to the respective melt in a corundum-lined crucible and kept in contact for the required time period. After the experiment, the Zr and Al contents in the melt were determined. It was found that the Zr stayed practically unchanged. The Al content in the melts did not exceed 0.1%. The impregna-

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YELYUTIN, V. P., et al., Khimiya Tverdogo Topliva, No 1, Jan/Feb 71, pp 147-153

tuon process could be divided into two parts: during the initial part (0-50 sec.), the impregnation depth depends on the square root of the time. With longer interaction times, i.e., t > 50 sec., surface diffusion of the atoms along the pore walls takes place. The mass transfer process was found to be described where t is the time and a and c are constants. Constants a and c as well as the rate of the impregnation process were calculated for three different MPG graphites at three different temperatures (1410, 1450, and 1550°C) treated with the two melts. It was found to be correct to consider the impregnation of graphite by the melts as a wetting process over the walls of the pores.

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USSR UDC 669.3.035.2

YELYUTIN, V. P., KOSTIKOV, V. I., DERGUNOVA, V. S., SHURSHAKOV, A. N., POSOS'TEVA, G. D., and KHAKIMOVA, D. K.

"Effect of the Degree of Efficiency of a Graphite Grid on the Velocity of its Treatment with Liquid Zirconium"

Tsvetnye Metally, No 4, Apr 71, pp 51-52

Abstract: Studies were continued on the penetration of liquid metals, in this case, zirconium, into the pores of graphite. Previous work showed that the penetration of zirconium into the pores reached a maximum and that zirconium carbide was formed. In the present work, a study was made of the effect of the ideal structure of the porous graphite on the velocity of penetration by the liquid zirconium. Cylindrical samples of carbon 20 mm in diameter and 60 mm in length were prepared from PROG-2400 stock. The samples were fired in an annular kiln at 1250°C for 280 hours, placed in graphite crucibles, covered with coke, and graphitized in a vacuum of 5×20^{-2} mm at 2000, 2400, and 2800°C for one hour.

X-ray diffraction patterns were made to determine the degree of conversion and then the samples were saturated with liquid zirconium at 1800, 2100, and 2250°C. The contact time varied between 5 to 20 sec; the velocity

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YELYUTIN, V. P., et al., Tsvetnye Metally, No 4, Apr 71, pp 51-52

in the rise of the melt in the pores was determined. X-ray diffraction showed that the samples processed at 2000°C have a turbostratic carbon structure. Thermal processing at 2400 and 2800°C leads to the appearance and breakdown of a three-dimensional ordering. The method of Maur and Mering was used to determine the extent of graphitization. The increase in the height of the melt in the pore with time gives a parabolic curve.

The average velocity of penetration is decreased with an increase in the interplanar constant and is the largest at 2100°C. As the melt penetrates along the surface of the pore, a chemical reaction occurs at the liquid zirconium-graphite interface, forming zirconium decreases as a result of the precipitation of zirconium carbide and a diffusion of carbon across the carbide layer.

The viscosity of the liquid zirconium also increases due to the presence of zirconium carbide and this in turn slows the penetration. The extent of graphitization can change the velocity of the firing process even without temperature changes.

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USSR

UDC 669.71:669.046.42.001

YELYUTIN, V. P., MITIN, B. S., and SAMOTEYKIN, V. V., Moscow

"Effect of Oxygen Pressure on Aluminum Oxidation"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 3, May-Jun 72, pp 227-230

Abstract: A detailed description is given of an experimental setup developed with the purpose of studying the kinetics of oxidation manometrically. Measurements were carried out on pure (99.99%) aluminum samples at 520, 550, 570, 620, and 650°C at pressures from 6 to 200 torr. Kinetic characteristics of oxidation at various temperatures and pressures make it possible to study the initial oxidation section and to evaluate the process during the experiment. It is shown that the oxidation rate increases with temperature according to the Arrhenius law, with activation energy of 35± kilocal/mol, and that the oxidation rate decreases with increasing oxygen pressure at 650°C and in the range of pressure from 6 to 200 torr. The parabolic oxidation constant is expressed by the formula: $K = 19.5p^{-1/n}$ where $n = 2.34$ and p is the oxygen pressure.

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USSR

UDC 546.621'21:532.612.4

YELYUTIN, V. P., MITIN, B. S., and NAGIBIN, Yu. A., Moscow Institute of Steel and Alloys

"Method for Measuring the Temperature Coefficient of Surface Tension of Liquid Aluminum Oxide"

Moscow, Zavodskaya Laboratoriya, No 2, 1971, pp 194-196

Abstract: It is proposed that the temperature coefficient of surface tension of molten aluminum oxide be measured by the method of breaking away a membrane or a hollow cylinder. A function characterizing the temperature dependence of surface tension of liquid aluminum oxide was established. The mean square error of the experiment is + 3.5%.

USSR

UDC 669.14.018.58.001.6

YELYUTINA, G. I., KAL'NER, D. A., and MURAV'YEVA, YE. M.

"Magnetic Steel for Welded Bimetallic Rotors"

Spetsial'nyye Stali i Splavy (Special Steels and Alloys -- Collection of Works), No 77, Metallurgiya Press, 1970, pp 200-207

Translation: A magnetic high-strength steel, type 30Kh3V2M, is developed with room temperature iltimate strength over 1,000 Mn/m^2 (>100 kg/mm^2), yield point greater than 800 Mn/m^2 (> 80 kg/mm^2), and impact toughness 1250-1450 kj/m^2 (12.5-14.5 $kg \cdot m/cm^2$). The steel has great hardenability, good weldability, low tendency to superheating, and good resistance to tempering. After hardening from 1150°C in oil and double annealing at 625°C (2+8 hr), it has high magnetic properties at room temperature: B_{25} = 1.38-1.44 T (13,800-14,400 gs); B_{400} = 1.88-2.0 T (18,800-20,600 gs).

Type 30Kh3V2M steel can be used for welded bimetallic rotors of high-speed, powerful electrical machines, due to its combination of mechanical, magnetic, and technological properties. 4 figures; 8 tables.

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USSR

UDC 669.71.053.24(083.8)

KHITRIK, S. I., GASIK, M. I., VUKOLOV, YE. A., KLIENKOVICH, N. A., PORADA, A. N., LAGUNOV, YU. V., POLONSKIY, S. M., IORDANOVA, Z. A., MALYSHEV, V. I., YEMLIN, B. I., KASHKUL', V. V., MASHKOV, V. P. TSEYMAKH, N. L., YEM, A. P., CHERNYSH, F. I., and KOLNOGUZENKO, V. A., Dnepropetrovsk Metallurgical Institute

"Method of Smelting Abrasive Electrolytically Produced Corundum"

USSR Author's Certificate No 263635, filed 15 Oct 65, published 10 Jun 70 (from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11 G101 P)

Translation: A method is proposed for smelting abrasive electrolytically produced corundum in a thermal furnace which involves deep fusion of alumina-containing charge with reducing agents. To increase the abrasive properties of corundum and to obtain in it a Ti oxide content of $\leq$ 1%, smelting is carried out on kaolin presintered with Fe-ore additive or scale in the amount of 20-30 wt % of the charge.

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1/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--EFFECT OF SOME MODERN HYPOTENSIVE DRUGS ON THE FUNCTIONAL STATE OF THE MYOCARDIUM IN PATIENTS WITH HYPERTENSIVE DISEASE -U-

AUTHOR--YEMCHENKO, V.I.

COUNTRY OF INFO--USSR

SOURCE--VRACHEBNOYE DELO, 1970, NR 5, PP 5-8

DATE PUBLISHED----------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ANTIHYPERTENSIVE AGENT, HYPERTENSION, MYOCARDIUM, POTASSIUM COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1725 STEP NO--UR/0475/70/000/005/0005/0008

CIRC ACCESSION NO--AP0129093

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129093

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COMPARATIVE EVALUATION OF THE EFFECT OF ISMELIN AND THIAZIDE PREPARATIONS ON THE PHASE STRUCTURE OF CARDIAC CONTRACTION WAS CARRIED IN 121 PATIENTS BY MEANS OF POLYCARDIOGRAPHY. RESULTS INDICATE THAT ISMELIN AND PREPARATIONS OF THE THIAZIDE SERIES ARE CHARACTERIZED BY APPROXIMATELY SIMILAR HYPOTENSIVE EFFECTS AND ARE ACCOMPANIED BY CHANGES OF THE CONTRACTION STRUCTURE OF THE LEFT CARDIAC VENTRICLE. BUT ISMELIN AND THIAZIDES DO NOT SIMILARLY EFFECT THE PHASE STRUCTURE OF CARDIAC CONTRACTION. TO MINIMIZE THESE CHANGES ISMELIN SHOULD BE COMBINED WITH POTASSIUM SALTS OR ASSOCIATED WITH ISMELIN, CORRESPONDINGLY REDUCING THE THIAZIDE DOSAGE. FACILITY: KIYEVSKOGO NAUCHNO-ISSLEDAYATEL'SKOGO INSTITUTA KLINICHESKOY MEDITSINY IM. N. D. STRAZHESKO CHERNOVITSKIY MEDITSINSKIY INSTITUT.

UNCLASSIFIED

USSR

UDC 519.95

YEMELICHEV, V. A., and KOVALEV, M. M., Belorussian State University imeni V. I. Lenin

"Solution of Some Concave Programming Problems by the Method of Constructing a Sequence of Plans. II"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Fiziko-Matematicheskikh Nauk, No 1, 1972, pp 65-74

Abstract: Inasmuch as, during the operation of algorithm ψ, part of the variables x_{ij} is fixed ($x_{ij} = 0$ or b_j), the range of each sum $\sigma_i = \sum_{j=1}^{n} a_{ij}x_{ij}$, $i = \overline{1,m}$ narrows. Because of this, at any step of the algorithm ψ it is possible to improve the approximation of each concave function $f_i(\sigma_i)$; i.e., to raise the minorant of the functional $F(X)$. As a result, the optimality criterion will come into play sooner. The article, which continues a study begun in an earlier article by the authors, describes a new algorithm

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USSR

YEMELICHEV, V. A., and KOVALEV, M. M., Izvestiya Akademii Nauk BSSR, Seriya Fiziko-Matematicheskikh Nauk, No 1, 1972, pp 65-74

$\hat{\psi}$ for solving assignment problem (1)-(3), with allowance for the possibility of constant refinement of the minorant of the functional F(X). In addition, a generalization is given of this algorithm for an assignment problem with limited production volumes, as well as an allocation problem with Boolean variables. Since assignment problems are closely related to problems of parts standardization and machine pool selection, algorithm $\hat{\psi}$ can be used also for the solution of these problems. A numerical example of a generalized parts standardization problem is given to illustrate the algorithm.

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USSR

YEMELICHEV, V. A., KRAVERSKIY, I. M.

"Machine Experiment on Solution of Integer Linear Programming Problem by the Method of Construction of Sequences of Plans"

Zh. vychisl. mat. i mat. fiz. [Journal of Computer Mathematics and Mathematical Physics], 1973, 13, No 2, pp 467-471 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V517 by the authors)

Translation: Results are presented from a machine experiment on solution of the test problems of Peterson (RZHMAT, 1968, 7V382) by algorithms based on the method of construction of sequences of plans (RZHMat, 1972, 6V441), and the results produced are compared with the results of other authors.

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USSR

UDC 512.25

YEMELICHEV, V. A., Belorrussian State University imeni V. I. Lenin, Minsk

"Theory of Discrete Optimization"

Moscow, Doklady Akademii Nauk SSSR, Matematika, Vol 198, No 2, 1971, pp 273-276

Abstract: The author proposes a modification of the $\tilde{\psi}$ method which is used for solving discrete optimization problems. The proposed modification consists of setting up a sequence of plans (in such an order) with omission of those known to be non-optimal. The new method includes the known methods of split-off (Gomori) and brances and boundaries (Land and Doig) for solving integer-valued, linear programming problems. It is also shown that the $\tilde{\psi}$ method can be used for the effective solution of linear programming problems with Boolean variables and non-negative coefficients of limitation. The proposed method was realized on the Minsk-22 computer. Ten 5x32-dimension problems were solved. Optimal solution time varied from 10 seconds to 3 minutes, and the number of iterations varied from 30 to 120. In the case of 10x48 problems, solution time fell within the 1-7-minute interval. The maximal dimension of the problems being solved was 28x91. The solution of five such problems required 15 seconds (12 iterations), 2 min. (91 iterations),

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USSR

YEMELICHEV, V. A., Doklady Akademii Nauk SSSR, Matematika, Vol 198, No 2, 1971, pp 273-276

8 min. (104 iterations), 11 min. (202 iterations), and 17 min. (395 iterations). The computer worked more than half of the time in the case of all the enumerated problems in order to provide proof of the optimal nature of the plan. This article was presented for publication 18 November 1970 by Academician L. V. Kantorovich. Original article: 11 formulas and five bibliographic entries.

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USSR

UDC: 621.372.852.1(088.8)

YEMELIN, B. F., Military Communications Academy

"A Band Filter With Opposed Rods"

USSR Author's Certificate, No 251105, filed 15 Apr 68, published 9 Feb 70 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7B162 P)

Translation: As a distinguishing feature of this filter with opposed rods, the device is designed for suppresion of one of the frequencies of the passband. The filter contains additional pairs of opposed rods electrically coupled to the input and output rods. The electrical length of these additional rods is a multiple of the harmonic to be suppressed. One illustration. Resumé.

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USSR UDC 621.791.048.045:771.8

TSYGAN, B. G., YEMELIN, V. F., and DEMCHENKO, V. G., "Khimmash" Plant, Pavlograd; and TERESHCHENKO, M. P., Dnepropetrovsk

"Automatic Two-Layered Steel Welding with Metallic Powder"

Kiev, Avtomaticheskaya Svarka, No 6, Jun 70, pp 43-45

Abstract: A welding procedure has been developed which results in welding seams with high mechanical and anti-corrosive properties. PZh-1M and PZh-2M metallic powders are used as the auxiliary material. Essentially, the method involves making a Y-shaped division of the seam edges and filling the division with metal powder before the usual automatic welding process is done. The metallic powder is obtained by the method of reducing iron from slag. To prevent the formation of pores, it is best to use a wire of the Sv-08G2S type. Before the welding, the metallic powder must be cleansed of its impurities and dried at 350-400°C for 1.5-2.0 hours. Microphotographs of welding seams made by this method are shown, and a table gives various data relating to the method.

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USSR

UDC 547.233

KESSLER, YU. M., FOMICHEVA, M. G., ALPATOVA, N. M., and YEMELIN, V. P.,
Electrochemical Institute, Academy of Sciences Institute of Chemical
Mechanical Engineering, Moscow

"Certain Physical and Structural Characteristics of Hexamethylphosphoro-triamide"

Moscow, Zhurnal Strukturnoy Khimii, Vol 13, No 3, May/Jun 72, pp 517-519

Abstract: Hexamethylphosphorustriamide (HMPT) (tris(dimethylamino)phosphine oxide $(CH_3)_2N_3PO$) is an important organic solvent, of special interest due to its use as a medium for the study of electron behavior in condensed phases. Three physicochemical properties of the solvent were measured. Using a pycnometer, the specific gravity was determined to be 1.0202 at 25°C and 1.0327 at 10°. The viscosity, measured with an Ostwald viscosimeter, was reported as 3.24 centipoise at 25° and 4.50 centipoise at 10°. The dielectric constant was measured at 200 kilohertz by phase displacement with compensation for carbon. The results were 30.02 at 25° and 32.6 at 10°. A comparison of the molecular and molar volumes of several liquids with those of HMPT suggests a structure other than close packing. Further comparison of the function inverse times temperature derivative for dielectric constant and specific gravity implies that HMPT has a labile structure with a dipole character.

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USSR

UDC: 551.596+534-143

YEMEL'YANENKO, I. V., LIBENSON, Ye. B., PALIY, A. F., and PAPERNO, A. I.

"Some Results of Experimental Investigations Into Sea Reverberation in the Radiation of Complex Signals"

Moscow, V sb. Tezisy dokl. 3-y Vses. shkoly--seminara po stat. gidroakustike, 1971 (Theses of Reports, Third All-Union School--Seminar on Statistical Hydroacoustics, 1971 -- collection of works) 1972, pp 343-347 (from RZh--Fizika, No 4, 1973, Abstract No 4Zh650)

Translation: Results are given of an experimental investigation into the degree of correlation of sea reverberation (R) and complex probing signals in mutual correlation processing. The presence of correlated components of sea R is detected in the near zone as well as in the far zone of the acoustical field. The experiments were conducted in the sea area at a depth of 3000-3500 m. The hydroacoustical conditions of the experiments and the equipment used for recording and processing the signals are described. Examples are_

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USSR

YEMEL'YANENKO, I. V., et al., Tezisy dokl. 3-y Vses. shkoly--seminara po stat. gidroakustike, 1971, (from RZh--Fizika, No 4, 1973, Abstract No 4Zh650)

given of the recorded envelopes and samples of received R. The correlograms obtained are analyzed in detail. The general idea here is the following: with an increase in frequency deviation, the level of the uncorrelated component of R is reduced and the level of the correlated components comparable with the maximum autocorrelation function of the probing signal is also reduced. It is noted that the expression for the correlated components of R varied only slightly although the number of responses with a relatively high correlation level dropped noticeably. On the basis of a comparison of the moments of appearance of correlation maxima with the depth of the locale and the radiation picture, it can be assumed that they are the result of reflections not only from the floor and surface but also from the scattering objects, the distance between which is small compared with the wavelength of the sound. L. V. Tikhomirova

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USSR

UDC 616.001.16+359.6+613.67

ALFIMOV, N. N., NOVOZHILOV, G. N., and YEMEL'YANENKO, N. I.

"Heat Disorders Among Ship Personnel During Cruises in the Low Latitudes"

Moscow, Voyenno-Meditsinskiy Zhurnal, No 7, 1972, pp 81-86

Abstract: The literature, mostly non-Soviet, on the variety of disorders encountered in ship personnel as a result of exposure to high temperatures is reviewed. These disorders are responsible for a substantial percentage of the total sick rate among naval personnel serving in the low latitudes. They include heat stroke, heat exhaustion, heat syncope, heat cramps, asthenia or transient heat fatigue, and edema of the legs and feet. Each entity is discussed in terms of frequency, cause, and symptoms. A chart based on the literature data shows the possibility of a given disorder arising in relation to the temperature conditions and length of time people are exposed to them.

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USSR

UDC 621.315.592

GUSLIKOV, V. M., YEMEL'YANENKO, O. V., NASLEDOV, D. N., NEDEOGLO, D. D., and TIMCHENKO, I. N.

"Effect of a Magnetic Field on the Ionization Energy of Small Donor Impurities in GaAs and InP"

Leningrad, Fizika i Tekhnika Poluprovodnikov, No 9, Sep 73, pp 1785-1789

Abstract: An analysis is made of the ionization energy of small donors as a function of the magnetic field intensity in the area of fairly weak fields, using as specimens pure GaAs and InP crystals. As described in earlier articles published in the journal noted above (V. F. Dvoryankin et al, 5, 1971, p 1882), experiments along this line have already been conducted. In the present paper, the analysis noted above is made by considering the Hall coefficient as a function of the temperature under various magnetic field intensities. A table of the parameters for n-GaAs and n-InP, together with curves of the Hall coefficient, as functions of the temperature for the various types of specimen listed in the table is given. Curves are also plotted for the Hall coefficient and the resistivity as functions of the magnetic field intensity in GaAs at 4.5° K and for the change in ionization energy of small donor impurities as a function of the magnetic field intensity. In this last curve, the theoretical results are compared with the data found by the authors of the present article and others.

1/1

USSR

UDC: 621.315.592

GASANLI, Sh. M., YEMEL'YANENKO, O. V., NASLEDOV, D. N., and TALALAKIN, G. N.

"Peculiarities of Current-Carrier Migration in p-GaAs Crystals With Deep Impurity Levels"

Leningrad, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 2053-2056

Abstract: The results are given of experiments performed with p-type GaAs crystals doped with Mn, Co, Ni, and Cr. In addition to the Hall effect and the electrical conductivity, the change in resistance of the specimens in a transverse magnetic field was measured. It was found, in this brief communication, that in crystals with Mn and Co, the carrier migration occurred in the usual way. In crystals with Ni and Cr, and to some extent in strongly compensated crystals with Co, the migration shows peculiar variations. A table of the specimens and their characteristics at temperatures of 100-500° K is given. It is also found that there is a sharp drop in mobility at low temperatures in crystals of the $A^{III}B^{V}$ type, containing deep levels or impurities tending to form clusters. The authors note that the observed migration effects are not connected with surface conductivity influences.

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USSR

UDC: 621.315.592

GASANLI, Sh. M., YEMEL'YANENKO, O. V., LAGUNOVA, T. S., and NASLEDOV, D. N.

"The Nature of Negative Reluctance in Gallium Arsenide"

Leningrad, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 2010-2014

Abstract: Experiments are described for investigating n-type GaAs crystals doped with such substances as donors, acceptors, without full compensation of the donors, amphoterics, ferromagnetics, to clarify the effect of the individual impurity on the negative reluctance of the specimen. The experimental results are compared with the results of current theory, and the effect of impurity compensation on the negative reluctance is considered. The following elements were used for the doping: S, Se, Sn, Si, Cu, Ni, and Cr; these were introduced into the GaAs specimens at concentrations of 0.001-0.5%, the electron concentration after doping was 10^{15}-10^{18} per cm^3, and the mobility was 1000-6000 $cm^2/V \cdot sec$ at room temperature. It was found that the negative reluctance is independent of the doping substance and is a function only of the concentration of small donor levels.

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USSR

UDC 621.315.592

DVORYANKIN, V. F., YEMEL'YANENKO, O. V., NASLEDOV, D. N., NEDEOGLO, D. D., TELEGIN, A. A.

"Electric Properties of n-GaAs Epitaxial Layers"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 5, No 10, October 1971, pp 1882-1887

Abstract: A study was made of the Hall effect, electrical conductivity and mobility in n-GaAs epitaxial layers in the temperature range of 2.5-295° K. The layers were obtained by the method of gas epitaxy on a semiinsulating substrate made of gallium arsenide alloyed with chromium, and they had an electron concentration of $5.7.10^{14}$-$4.9.10^{15}$ cm^{-3} and a current carrier mobility of 7,500-8,000 cm^2/volt-sec at T=295° K. The maximum mobility in the investigated layers was 104,000 cm^2/volt-sec. In the n-GaAs epitaxial layers with $n > 10^{15}$ cm^{-3} at low temperatures, scattering of the neutral atoms of the admixture becomes significant. From analysis of the temperature dependence of the Hall factor, the donor concentration N_d, the acceptor concentration N_a, and the ionization energy of the small donor admixture E_d were determined. In

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USSR

DVORYANKIN, V. F., et al., Fizika i Tekhnika Poluprovodnikov, Vol 5, No 10, October 1971, pp 1882-1887

layers with a concentration of $n \sim 10^{15}$ cm^{-3}, a deep admixture level was detected with $E_{deep} \approx 0.1$ electron volts. The concentration of the admixtures giving a deep admixture level decreases with an increase in the purity of the layers. In the purest test piece ($n = 5.7 \cdot 10^{14}$ cm^{-3}) no deep level was detected. The ionization energy of small donor admixtures decreases with an increase in their concentration as $N_d^{1/3}$.

In order to perform a more detailed analysis, measurements of E_d in crystals with a different degree of admixture compensation are necessary. In addition, the possible dependence of E_d on temperature must be considered and studied to which variations in the number of admixture ions in the crystal and variation of the screening effect of the current carriers can lead.

2/2

1/2 015 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--HEIGHTS OF AURORA AND THEIR CONNECTION WITH GEOMAGNETIC DISTURBANCES IN HIGH LATITUDES -U-

AUTHOR-(02)-YEMEYLANEKO, S.N., KHORDSHEVA, O.V.

COUNTRY OF INFO--USSR

SOURCE--RAZDEL IV, POLYARNYYE SIYANIYA, 1970, NR 19, PP 72-76

DATE PUBLISHED-------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--AURORA, GEOMAGNETIC DISTURBANCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICL/FRAME--1994/0116 STEP NO--UR/3307/70/000/019/0072/0076

CIRC ACCESSION NO--AP0114512

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0114512

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ALTITUDE OF THE LOWER BORDER OF AURORAE WAS MEASURED ON THE BASIS OF SYNCHRONOUS PHOTOGRAPHS FROM TWO STATIONS. THE MEASUREMENTS RELATE TO A GEOMAGNETIC LATITUDE OF 72-73DEGREES. THE MOST PROBABLE VALUE OF THE ALTITUDE IS 125 KM. A DIURNAL DEPENDENCE IS OBSERVED IN THE ALTITUDE DISTRIBUTION: THE ALTITUDE IS MARKEDLY INCREASED FROM EVENING HOURS TO MIDNIGHT HOURS. THESE RESULTS CONFIRM THE EARLIER CONCLUSION THAT THE ISTANTANEOUS AURORAL ZONE IS ASYMMETRICAL WITH RESPECT TO THE EARTH* SJRFACE. ITS ALTITUDE IS GRADUALLY CHANGED: 150 KM, 125-130 KM AND 105 KM AT THE DAY, EVENING AND NIGHT PARTS RESPECTIVELY. THE CHARACTER OF GEOMAGNETIC DISTURBANCES IS DEPENDENT ON AURORA ALTUTUDE. THE LOWER AURORAE (H SMALLER THAN 130 KM) ARE ACCOMPANIED BY BAY LIKE DISTURBANCES THE HIGHER ONES BY IRREGULAR SHORT PERIOD FLUCTUATIONS IN THE SMALL AMPLITUDE.

UNCLASSIFIED

USSR

UDC 621.791.79

PATON, B. YE. (Academician), MEDOVAR, B. I. (Corresponding Member, Academy of Sciences Ukrainian SSR), SAFONNIKOV, A. N. (Cand. of Techn. Sciences), SEVRUK, A. N., and YEMEL'YANENKO, Yu. G. (Engineers)

"New Electroslag Welding Method"

Moscow, Svarochnoye proizvodstvo, No 6, June 72, pp 16-17

Abstract: Described is a new method for enlarging castings of nearly unlimited cross sections. The method involves the use of two advanced technological processes--electroslag remelting and electroslag welding. The test specimens were castings from 25KhN3MFA rotor steel produced by electroslag remelting. The castings were 1200 mm in diameter and weighed 14 tons. The electrode metal was of the same heat as the castings. The new electroslag welding technique does not require preheating. Mechanical property tests failed to reveal any differences between the base and the weld metal. Plant tests confirmed the superiority of the new method over all others currently in use with respect to simplicity and reliability. The new technique will be chiefly used for producing rotor shafts from individual castings and has been patented in a number of Western countries.
(5 illustrations, 3 tables)
1/1

USSR

IZOKH, V. V., SALOV, P. L., YEMEL'YANENKOV, V. I.

"Realization of the Operation $q' \equiv q \pmod{R}$ in Recirculating Generators"

Vestn. Belorus. Un-ta [Belorussian University Herald], 1972, Ser. 1, No 1, pp 78-80 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V605, by the authors).

Translation: A functional element is produced, performing the operation $q' \equiv q \pmod{k}$, the complexity of which is independent of k. An estimate of the speed is presented. The code of the number is represented by a time interval.

1/1

USSR

UDC: 621.396.67:624.97(088.8)

ARMOSOV, S. A., YEMEL'YANOV, A. S., KOROBOV, B. S., SHARAMET, A. Ya.

"A Spherical Support for Antennas"

USSR Author's Certificate No 259571, filed 29 Jul 68, published 27 Apr 70 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1B101 P)

Translation: A support is proposed which contains a housing, a central rod and a control mechanism for regulating the vertical and horizontal position of the antenna. The design provides for increased precision in setting the antenna, and operational reliability of the support.

1/1

Microelectronics

USSR

UDC 621.382.2

ALEKSANDROVA, G. A., YEFIMOV, V. I., YEMEL'YANOV, A. V., PASHINTSEV, Yu. I.

"Investigation of Planar Devices Based on the Gunn Effect"

Sb. nauchn. tr. po probl. mikroelektron. Mosk. in-t elektron. tekhn. (Collection of Scientifics Works on Problems of Microelectronics. Moscow Institute of Electrical Engineering), 1969, Issue 2, pp 34-37 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1B157)

Translation: The technology of production and the characteristics of planar devices based on the Gunn effect (PGE) are considered. For production of PGE, epitaxial films were employed of n-type GaAs grown on semi-insulating GaAs substrates with a resistivity of 10^6 ohm.cm. The concentration and mobility of electrons in the films amounted to $7 \cdot 10^{14}$--$1 \cdot 10^{15}$ cm^{-3} and 6000--9000 cm^2/v sec. In order to assure the prescribed geometry of the devices, a SiO_2 film was employed, obtained by decomposition of tetraethoxysilane in a high-frequency plasma. The contacts were obtained by deposition and fusing in H_2 at a temperature of 500°C of an AuSn alloy. The distance between contacts amounted to 80 micrometers. The dependences are presented of the output micro-wave power and the oscillation frequency on the bias voltage. The PGE generated

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USSR

ALEKSANDROVA, G. A., et al., Sb. nauchn. tr. po probl. mikroelektron. Mosk. in-t elektron. tekhn., 1969, Issue 2, pp 34-37 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1B157)

150 mw pulse power at a 1.3 GHz frequency. The PGE has positive temperature coefficient of resistance. A. Ye.

2/2

UDC 621.382.2

USSR

YEMEL'YANOV, A. V., RYABINKIN, Yu. S.

"Model of a Cathode Contact for Devices Using the Gunn Effect"

Elektron. tekhnika. Nauchno-tekhn. sb. Mikroelektronika (Electronic Technology. Scientific-Technical Collection. Microelectronics), 1970, Issue 4(25), pp 84-88 (from RZh--Elektronika i yeye primeneniye, No 5, May 1971, Abstract No 5B123)

Translation: A model of a cathode contact for devices using the Gunn effect is proposed. The contact consists of a metal (alloy) highly-doped n^+ region and a high-resistance ν-layer formed by diffusion of gold and silver. A computation of the contact resistance is presented, using the assumption that it is dependent upon the resistance of the ν-layer. Author's Abstract.

1/1

USSR

UDC 621.382.2

ALEKSANDROVA, G.A., YEFIMOV, V.I., YEMEL'YANOV, A.V.

"Gunn Effect Planar Devices"

V sb. Arsenid galliya (Gallium Arsenide--Collection Of Works), Issue 3, Tomsk, Tomsk University, 1970, pp 263-265 (from RZh--Elektronika i yeye primeneniye, No 3, March 1971, Abstract No 3B147)

Translation: The design, technology, and principal parameters are described of Gunn planar semiconductor diodes. An output power of 125 mwatt with an efficiency of 1.5-percent at a frequency of 1200 MHz was obtained. 2 ill. 4 ref. B.M.

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USSR

UDC 621.382.002

YEMEL'YANOV, A.V., PAVLOVA, YE.YE., PASHINTSEV, YU.I.

"Alloy Contact Of Tin--Gallium Arsenide"

Elektron. tekhnika. Nauchno-tekhn. sb. Poluprovodn. pribory (Electronic Technology. Scientific-Technical Collection. Semiconductor Devices), 1970, No 1(51), pp 182-188 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12B443)

Translation: The possibility is investigated of obtaining, at temperatures of 250 ÷ 450° C, a low-resistance ohmic contact of tin with gallium arsenide which is used for production of Gunn diodes. It is shown that the minimum resistance of the contact and 100 percent wetting of gallium arsenide is obtained by fusing in of tin with of tin chloride as a flux at temperatures of 550° C and above. 7 ref. Summary.

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USSR

Microelectronics

UDC 621.382.2

YEMEL'YANOV, A.V., PASHINTSEV, YU. I.

"Contact Of Vanadium and Gallium Arsenide"

V sb. Mikroelektronika (Microelectronics--Collection Of Works), Vyp 3, Moscow, Sov. Radio, 1969, pp 389-393 (from RZh--Elektronika i yeye primeneniye, No 6, June 1970, Abstract No 6B160)

Translation: A contact of n-type V--GaAs with an impurity concentration of 10^{16} cm^{-3} was investigated. The specimens were produced by deposition of V at a pressure of $2 \cdot 10^{-5}$ mm of mercury on GaAs plates oriented to the (111) plane. Before deposition the GaAs plates were polished by diamond powder (grain diameter less than 1 micron), decontaminated in toluene and methanol, and then etched in bromine methanol. The area of the contacts amounted to 3.8×10^{-2} cm^{-2}. The ohmic contact for the back of the specimen was produced by deposition in a vacuum and subsequent fusing in of an Au-Sn alloy. From an analysis of the forward branch of the voltage-current and the volt-farad characteristics of the contact, the values obtained for the height of the potential barriers were 0.84 plus or minus 0.06 and 0.90 plus or minus 0.03 ev, respectively. Annealing of the contacts in H_2 at temperatures of 500-600° C were conducted in order to decrease the height of the barrier. Specimens annealed at a temperature of 700° C over the course of 10-30 minutes had a linear voltage-current characteristics. 3 ref. V.K.

1/1

USSR

YEMEL'YANOV, B. A. and URYVAYEV, L. V., Institute of Virology imeni D. I. Ivanovskiy, USSR Academy of Medical Sciences, Moscow

"Study of the Mechanism of Induction of Interferon and Its Effect in Arbovirus Infection of a Tissue Culture"

Moscow, Voprosy Virusologii, No 3, May/Jun 1971, pp 333-339

Abstract: Group B arboviruses are among the viruses which can induce interferon synthesis in tissue cultures infected by them. St. Louis encephalitis virus is a good inducer for interferon which enters the medium at the beginning of the logarithmic growth stage of the extracellular virus and is produced by the cells a long time after the infection. The dynamics of virus accumulation and interferon formation was studied. The reproduction cycle of the virus was found to be comparatively long, and interferon formed in the medium by the end of the latent period, so that its presence could have an effect on the further course of the infection (particularly on a multicycle process). The effect of exogenous interferon on reproduction and the interferon-generating activity of St. Louis encephalitis virus was studied also. It was found that previous contact of the cells with interferon almost

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USSR

YEMEL'YANOV, B. A., et al, Voprosy Virusologii, No 3, May/Jun 71, pp 333-339

completely suppresses reproduction of the virus. However, the production of newly formed endogenous interferon was not prevented. This was confirmed by the fact that after treatment with interferon, the control culture was not infected by the virus. The production of endogenous interferon was inversely proportional to the degree of cellular resistance to the activity of the virus, which in turn was directly proportional to the activity of the exogenous interferon used for preliminary treatment of the cells. The time for the production of m-RNA for interferon was determined by the actinomycin D method. It was found that protein synthesis has to precede the early stages of St. Louis encephalitis virus production for the formation of interferon-specific m-RNA. Initial processes of viral RNA replication are necessary for interferon production in infected cells since the parent RNA presumably cannot induce interferon synthesis.

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1/2 012 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--BINDER FOR DIAMOND OR BORAZON TOOLS -U-

AUTHOR-(03)-YEMELYANOV, S.M., SHILO, A.E., SMOLYAR, A.S.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 266,041
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--17MAR70

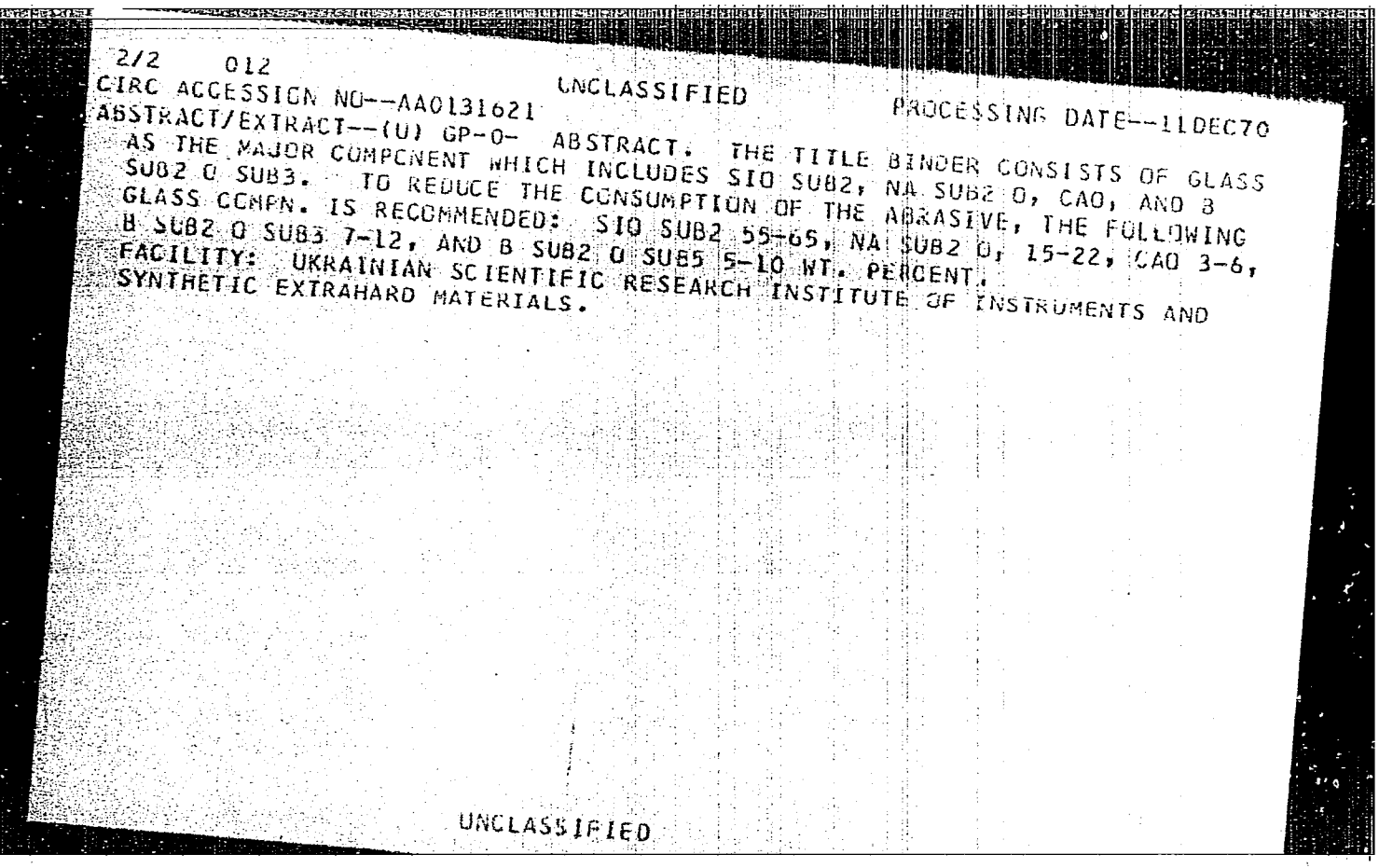
SUBJECT AREAS--MATERIALS

TOPIC TAGS--CERAMIC BINDER, ABRASIVE, OXIDE GLASS, SILICA, SODIUM OXIDE, CALCIUM OXIDE, BORON OXIDE, VANADIUM OXIDE, PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/1074 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0131621
UNCLASSIFIED



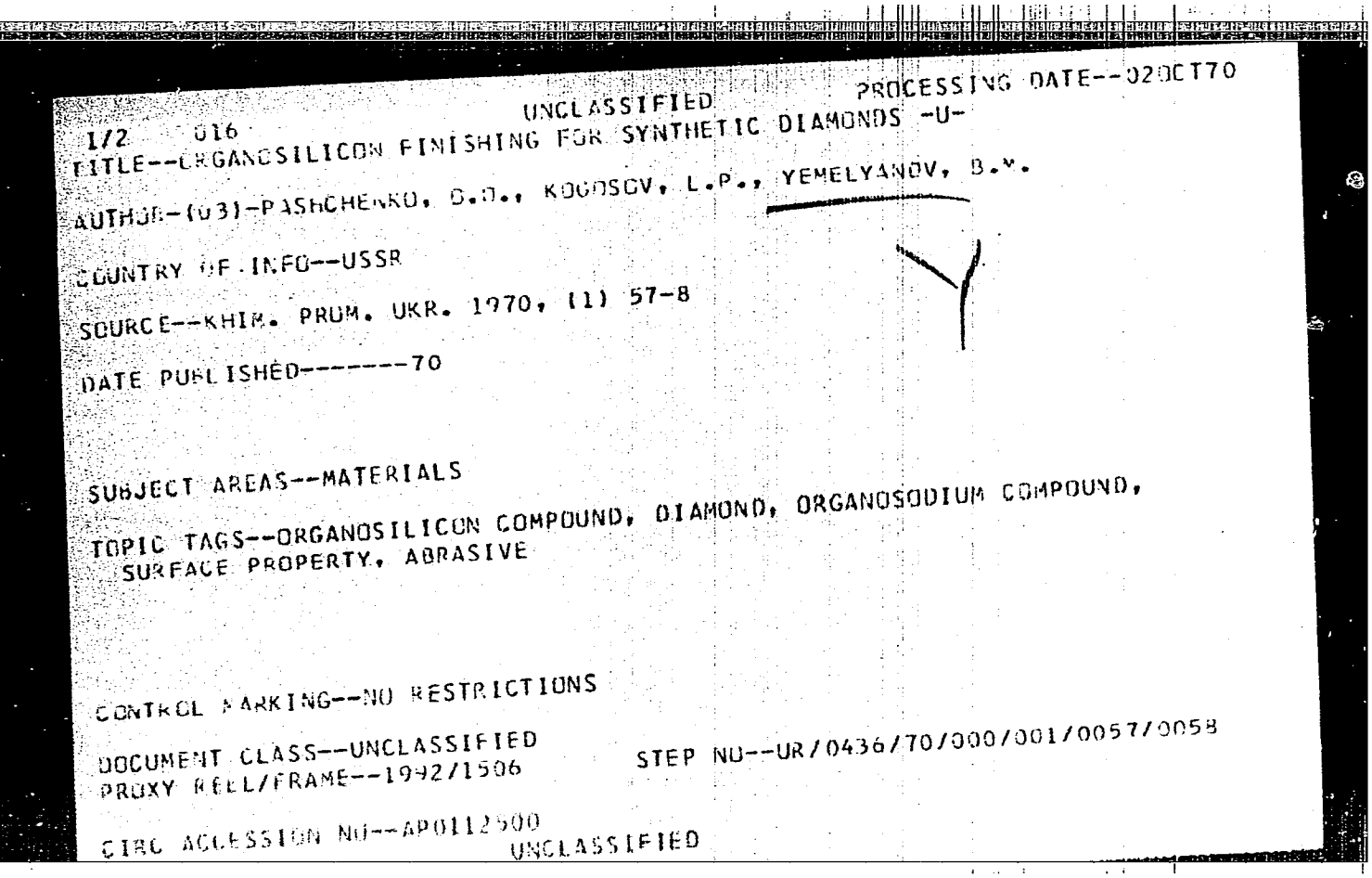
2/2 012 UNCLASSIFIED PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AA0131621

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE BINDER CONSISTS OF GLASS AS THE MAJOR COMPONENT WHICH INCLUDES SIO SUB2, NA SUB2 O, CAO, AND B SUB2 O SUB3. TO REDUCE THE CONSUMPTION OF THE ABRASIVE, THE FOLLOWING GLASS COMPN. IS RECOMMENDED: SIO SUB2 55-65, NA SUB2 O, 15-22, CAO 3-6, B SUB2 O SUB3 7-12, AND B SUB2 O SUB5 5-10 WT. PERCENT.

FACILITY: UKRAINIAN SCIENTIFIC RESEARCH INSTITUTE OF INSTRUMENTS AND SYNTHETIC EXTRAHARD MATERIALS.

UNCLASSIFIED



1/2 016 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--ORGANOSILICON FINISHING FOR SYNTHETIC DIAMONDS -U-

AUTHOR-(03)-PASHCHENKO, O.O., KOODSOV, L.P., YEMELYANOV, B.M.

COUNTRY OF INFO--USSR

SOURCE--KHIM. PROM. UKR. 1970, (1) 57-8

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ORGANOSILICON COMPOUND, DIAMOND, ORGANOSODIUM COMPOUND, SURFACE PROPERTY, ABRASIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1506 STEP NO--UR/0436/70/000/001/0057/0058

CIRC ACCESSION NO--AP0112500 UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--02OCT70

2/2 016

CIRC ACCESSION NO--AP0112500

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SYNTHETIC DIAMONDS WERE TREATED WITH DIL. SOLNS. OF NA ORGANOSILICONATES RSI(OH) SUB2 ONA (I) (R EQUALS ME, ET, CH SUB2:CH, AND PH), THEN HEATED TO 150-200DEGREES FOR 2 HR AND WASHED. DIAMOND ABRASIVE INSTRUMENTS WERE OBTAINED FROM SILICONIZED DIAMONDS BY USING POWD. BAKELITE AS BINDER. SILICONIZATION OF THE DIAMONDS RESULTS IN THE HYDROPHOBIZATION OF THE SURFACE AND IMPROVED ADHESION TO THE BINDER. EXPTS. WITH SILICONIZED DIAMONDS SHOWED THAT THIS TREATMENT REDUCES THE WEAR OF DIAMOND IN ABRASIVE INSTRUMENTS. THE BEST RESULTS WERE OBTAINED WITH I (R EQUALS ME), FOLLOWED BY I (R EQUALS CH SUB2:CH) AND I (R EQUALS ET). THE USE OF I (R EQUALS PH) DID NOT IMPROVE THE PROPERTIES OF THE ABRASIVE.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--INTERACTION OF DIAMOND CUBIC BORON NITRIDE, AND GRAPHITE WITH GLASS MELTS -U-

AUTHOR-(04)-PASHCHENKO, O.O., YEMELYANOV, B.M., SHILO, A.E., KRUGLITSKAYA, V.YA.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(3), 645-6

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--GLASS COMPOSITION, DIAMOND, BORON NITRIDE, SURFACE TENSION, ADHESION STRENGTH, ABRASIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/1564 STEP NO--UR/0020/70/190/003/0645/0646

CIRC ACCESSION NO--AT0100182

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AT0100182

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SMALL PIECES (APPROX. 0.05 G) OF GLASSES OF VARIOUS COMPNS. WERE PLACED ON HORIZONTAL POLISHED SURFACES OF DIAMOND AND CUBIC BN, HEATED IN AN AR ATM. TO 800DEGREES, AND THEN THE WETTING ANGLE (THETA) AND SURFACE TENSION (SIGMA) MEASURED. WORK OF ADHESION (A) WAS CALCD. BY THE EQUATION A EQUALS SIGMA (1 PLUS COS THETA). THESE DATA ARE IMPORTANT FOR THE MANUF. OF CERAMIC ABRASIVE TOOLS BECAUSE THE BETTER THE WETTING, THE HIGHER THE BONDING STRENGTH BETWEEN ABRASIVE GRAINS AND THE VITREOUS MATRIX. THE K SUB2 O CONTENT OF THE GLASS IMPAIRS WETTING TO A HIGH EXTENT.

UNCLASSIFIED

Glass and Ceramics

USSR UDC 661.184 + 678.84

PASHCHENKO, A. A., YEMEL'YANOV, B. M., SHILO, A. YE., and KRUGLITSKAYA, V. YA.
Kiev Polytechnical Institute, Kiev, Ministry of Higher and Secondary Specialized Education USSR

"Interaction of Diamond, Cubic Boron Nitride, and Graphite with Glass Melt"

Moscow, Doklady Akad. Nauk SSSR, Vol 190, No 6, Jan 70, pp 645-646

Abstract: The authors studied the behavior of fused glass in contact with the surfaces of diamond, cubic boron nitride, and graphite, determining its wetting contact angle and adhesion. It was determined that the diamond and cubic boron nitride differ markedly from graphite by their contact angle, which is $< 90^{\circ}$ and $> 90^{\circ}$, respectively. Substituting K_2O for Na_2O in the glass results in drastic decrease of its wetting capacility of diamond and boron nitride surfaces. BaO improves slightly the wetting of diamond, and TiO_2 - both of the abrasive agents. The contact angle is lowered considerably on introduction of V_2O_5. Substituting PbO for B_2O_3 has a detrimental effect on the diamond but improves the wetting of boron nitride. Best results are obtained by increasing the B_2O_3 content; in the case of diamond and cubic boron nitride the angle becomes almost zero, and in the case of graphite it is lowered to below 90°.

1/2 025 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--EFFECT OF THE MOLECULAR WEIGHT OF POLY(METHYL METHACRYLATE) ON VISCOUS AND DEFORMATION STRENGTH PROPERTIES OF ITS SOLUTIONS IN METHYL

AUTHOR-(05)-RYABOV, A.V., YEMELYANOV, D.N., CHEKNODEYEVA, I.V., ROSLYAKOVA, V.A., SHABALINA, N.A.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(3), 192-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--MOLECULAR WEIGHT, POLYMETHYLMETHACRYLATE, METHYL METHACRYLATE, SHEAR STRESS, FLUID VISCOSITY, THIXOTROPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1202 STEP NO--UR/0460/70/012/003/0192/0195

CIRC ACCESSION NO--AP0116667

UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002203630005-0"

2/2 025 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0116667

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SHEAR STRESS (P) VS. VISCOSITY (ETA) RELATIONS OF 15PERCENT POLY(ME METHACRYLATE) (I) IN ME METHACRYLATE DEPEND ON THE MOL. WT. (M) OF I. IN 0-80 DYNE-CM PRIME2 P RANGE ETA IS CONST. WHEN M IS 5.6 TIMES 10 PRIME4 OR 1.2 TIMES 10 PRIME5. HOWEVER, WHEN M EQUALS 1.3 TIMES 10 PRIME6 THESE SOLNS. ARE THIXOTROPIC: ETA RAPIDLY DECREASES WHEN P GREATER THAN 8 DYNES-CM PRIME2. FACILITY: NAUCH.-ISSLED. INST. KHIM., GOR'K. GOS. UNIV. IM. LOBACHEVSKOGO, GORKI, USSR.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--FORMATION OF RESINOUS STRUCTURES IN RUBBERS DURING VULCANIZATION AND THEIR EFFECT ON REINFORCEMENT -U-

AUTHOR-(04)-BURAKOVA, N.N., EPSHTEYN, V.G., YEMELYANOV, D.P., BABYUK, D.N.

COUNTRY OF INFO--USSR

SOURCE--KOLLOIONYY ZHURNAL, 1970, VOL 32, NR 3, PP 337-341

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--MOLECULAR STRUCTURE, FORMALDEHYDE, POLYMER CROSS LINKING, RUBBER, VULCANIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/2152 STEP NO--UR/0069/70/032/003/0337/0341

CIRC ACCESSION NO--AP0125735

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--30OCT70

2/2 014
CIRC ACCESSION NO--AP0125735
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POSSIBILITY HAS BEEN STUDIED OF THE FORMATION OF RESINOUS STRUCTURES IN RUBBER DURING VULCANIZATION AS THE RESULT OF INTERACTION OF PHENOLIC RESINS (RESORCINOL FORMALDEHYDE OR LIGNIN) WITH RESOTROPIN. IN THIS CASE RUBBER REINFORCEMENT DEPENDS ON THE AMOUNT OF RESIN FORMING COMPONENTS IN THE MIX. ADDITION OF A RESIN FORMING SUBSTANCE (RESOTROPIN) MIXED WITH SMALL AMOUNTS OF RESIN ENSURES THE FORMATION DURING VULCANIZATION OF SECONDARY CHAIN STRUCTURES FROM RESIN PARTICLES AS THE RESULT OF THEIR CHEMICAL COMBINATION.
FACILITY: YAROSLAVSKIY TEKHNOLOGICHESKIY INSTITUT.

UNCLASSIFIED

Acc. Nr.: AM0033076 4 Ref. Code: 460000

Andreykov, V. A.; Yemel'yanov, I. A.

Reliability of Diesel-Electric Units and Their Automatic Systems (Nadezhnost' dizel'-elektricheskikh agregatov i ikh sistem avtomatizatsii) Moscow, Mashinostroyeniye, 1970, 295 pp (SL:1813)

TABLE OF CONTENTS:

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Reel/Frame 19701465

18

AM0033076

The book deals with basic methods for quantitative determination of reliability of electric units, a brief analysis of causes of malfunctions and the most reliable elements of low-power diesel-electric units...

It was written for engineering-technical personnel engaged in development, production and operation of electric units.

3/2

19701466

USSR

ZAPEVALOV, P. P., MILASHCHENKO, N. Z., PADZINOVSKIY, I. P., GORTLEVSKIY, A. A., MARINCHENKO, M. Z., YAKOVLEVA, L. I., YEMEL'YANOV, I. M.

"Results of Field Testing of Various Emulsions and Forms of 2, 4-D Butylester"

Nauch. Tr. Omsk. S-Kh. In-t. [Scientific Works of Omsk Agricultural Institute], No 84, 1971, pp 129-131. (Translated from Referativnyy Zhurnal Khimiya, No 4, Moscow, 1972, Abstract No 4N693 by T. A. Belyayeva).

Translation: In 1969, experiments were performed to compare the technical effectiveness of various 2, 4-D emulsions under field conditions when sprayed from the air (dose 0.4 kg/ha). Products used were: 1. 2,4-D -- technical preparate +1% OP-10 emulsifier; preparation of the emulsion was by spraying the preparate into water; 2. 2,4-D -- technical preparate +3% OP-10, spraying method; 3. 2,4-D -- "A" form (60% 2,4-D butylester, 20% OP-7, 20% diesel fuel); 4. 2,4-D type "B" (60, 10 and 30 % respectively); 5. 2, 4-D -- "C" form (60, 5 and 35 % respectively); 6. 2,4-D -- technical preparate. The effects of the herbicide were evaluated on the basis of the quantity and weight of perennial weed shoots and the wheat harvest. Versions 1 and 2 give the best results.

1/1

USSR

UDC: 621.039.564.2

YEMEL'YANOV, I. Ya., VETYUKOV, V. N., KONSTANTINOV, L. V., NAZARYAN, V. G., PAVLOV, I. K., POSTNIKOV, V. V.

"Discrete Testing of Distributions of Power Output in Nuclear Reactor Cores"

Moscow, Atomnaya Energiya, Vol 34, No 2, Feb 73, pp 75-79.

Abstract: This work presents a study of two methods of discrete testing of the distribution of power output: empirical and calculation-experimental. The first method, the engineering solution of the problem, is based on the use of simple empirical relationships produced in experiments involved in startup and initial operation of the first reactor of a given type; the second method is based on simultaneous use of the results of physical calculation and discrete measurements of the distribution of power output. The application of both methods is illustrated using data from the Belo-yarsk Nuclear Power Plant. The methods for discrete testing of multi-dimensional distributions studied in this work are intended for use in the algorithms of the computers at nuclear power plants for testing of the distribution of power output. However, with slight changes, they can be used for other discrete measurement tasks as well.

1/1

USSR

UDC 621.039.538

BOLDYREV, G. N., VESELKIN, A. P., YEGOROV, Yu. A., YEMEL'YANOV, I. Ya., ZHIRNOV, A. D., ORLOV, Yu. V., KONSTANTINOV, L. V.

"Study of the Shielding Problems on Water Cooled - Water Moderated Research Reactors"

V sb. Vopr. fiz. zashchity reaktorov (Problems in Reactor Safety Physics -- Collection of Works), No. 5, Moscow, Atomizdat, 1972, pp 235-250 (from RZh-50. Yadernyye reaktory, No 5, May 72, Abstract No 5.50.62)

Translation: Several special installations were constructed to study shielding. The BSF and GTR installations were swimming pool reactors employing 1 and 3 Mw neutrons, respectively, placed on moving bridges in large water pools. The B-2 device on the BR-5 reactor was developed to study the laws of the attenuation of γ-quanta and reactor neutrons in the geometry of a unidirectional beam; the materials to be studied or models of the shielding were placed in a niche in the reactor shielding. A zero-power reactor was intended for studying processes in the shield directly adjacent to the reactor core. The reactor was equipped with filters in one of the directions making it possible to obtain an optimal relationship between the neutron and

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USSR

BOLDYREV, G. N., et al, Vopr. fiz. zashchity reaktorov, No. 5, Moscow, Atomizdat, 1972, pp 235-250

γ-quanta fluxes. The OR-M experimental device is also intended for studying problems in reactor shielding. The 50-kw water cooled - water moderated research reactor is also equipped with devices for conducting experiments on shielding. Various studies associated with the radiation problems of shielding are carried out on this reactor. A description of the reactors, experimental devices, and characteristics of the devices and methods used in the research are given.

YEMEL'YANOV, M. D.

JPRS 54050
18 May 72

UDC 612.833.886-06:612.89

ROLE OF HIGHER AUTONOMIC CENTERS IN THE MECHANISMS OF VESTIBULAR-AUTONOMIC REFLEXES

(Article by M. D. Yemel'yanov and A. M. Bachmayev, Moscow, Komitcheskaya Biologiya i Meditsina, Russian, Vol 6, No 2, March-April 1971, pp 55-61, submitted for publication 13 April 1971)

Abstract: This paper gives experimental data describing the functional relationship between the vestibular system and the respiratory and vasomotor centers which were accumulated during adequate (swinging) and electric stimulation of the labyrinth. The study revealed the relationships between the responses of neurons and the functional state of the centers. The authors also discuss the mechanisms of vestibular-autonomic reactions with respect to peculiarities in the cerebellar function.

The most clearly expressed symptoms of motion sickness are autonomic disorders. A thorough description of the latter is given in many reviews (Spiegel; Tyler and Bard; N. N. Khechinashvili; Graybiel, et al.). The facts presented by these researchers make it possible to assume that the development of the classical kinetosis syndrome under the influence of prolonged vestibular stimulation is dependent in large part on the instability of central control of links in the autonomic nervous system; as a result, some persons are more sensitive to motion than others. We believe that the functional state in the effector link of the reflex also plays an important role in the development of vestibular-autonomic symptoms.

Unfortunately, the morphological structures and peculiarities in the processing of information in the "relay stations" of the vestibular-autonomic reflexes still remain unstudied. This paper is devoted to a further investigation of the mechanisms of motion sickness at the level of the higher autonomic centers and the functional relationship of the vestibular system to the latter; this has direct application, in particular, to so-called satellite sickness.

YEMEL'YANOV, M. D.

JPRS 55-287

12 Aug 72

UDC 612.833.858.014.47:531.113(049.3)

BOOK ON LABYRINTHAL AND EXTRALABYRINTHAL MECHANISMS OF REACTIONS TO ACCELERATION

[Book* review by Prof M. D. Yemel'yanov; Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 6, No 1, 1972, pp 91-93]

The monograph under review generalizes the results of many years of investigations of nervous and humoral mechanisms of the reactions of man and animals to accelerations. We note the strictly differentiated approach by the author to study of nervous and humoral components of the mechanism of reactions of definite systems (organs) to radial, angular and linear accelerations of different magnitude, some of which are addressed primarily to the labyrinthal receptors, whereas others involve extralabyrinthal mechanisms in the reaction together with the vestibular apparatus.

The book presents much experimental data obtained using the various physiological, electrophysiological and biochemical methods, some of which were developed by the author (for example, elevators).

The first section in the book (Chapters I-IV) is devoted to a study of the influence of accelerations on the tone of the skeletal muscles and higher nervous activity. On the basis of original experimental data the author shows that the shortening of post-rotational nystagmus and intensification of statokinetic tonic reactions in the muscles of the extremities in response to rotation and vertical movement of the body cannot be confined solely within the framework of functional interaction of the cupular-endolymphatic and otolithic systems of the labyrinth. It was found that these reactions can be caused by the more complex interaction of other afferent systems excited under the influence of accelerations in which an important role is also played by the proprioceptive, interoceptive and exteroceptive (optic) afferentations.

* Labirintnyye i Ekstralabirintnyye Mekhanizmy Makroreyk Somaticheskikh i Vegetativnykh Reaktsiy Na Uskoreniye (Labyrinthal and extralabyrinthal mechanisms of some somatic and autonomic reactions to acceleration), A. S. Dmitriyev, Science and Technology Press, Minsk, 1969.

USSR UDC: 681.3.06:51

YEMEL'YANOV, M. Ye., MARCHENKO, N. V.

"Programming Algorithms for Processing Tabular Information"

Tr. 3-y Zimn. shkoly po mat. programmir. i smezhn. vopr., 1970, vyp. 2 (Works of the Third Winter School on Mathematical Programming and Related Problems, 1970, No 2), Moscow, 1970, pp 300-313 (from RZh-Kibernetika, No 9, Sep 71, Abstract No 9V597)

Translation: The authors describe a library of standard programs for simplifying the programming of printing out documents in the required form, and changing the form of printout and data processing algorithms. The described library was realized on the "Ural-14" computer for the daily accounting system of the slabbing shop at the "Zaporozhstal'" Plant. V. Mikheyev.

1/1

Acc. Nr: AP0047326 Ref. Code: UR 0300

PRIMARY SOURCE: Ukrayns'kiy Biokhimichniy Zhurnal, 1970,
Vol 42, Nr 1, pp 50-55

DYNAMICS OF ELECTROLYTE DISTRIBUTION AND OXYGEN CONSUMPTION IN SLICES OF THE RAT BRAIN CORTEX UNDER VARIOUS INCUBATION CONDITIONS

N. A. Emelyanov, I. A. Garina

The I. P. Pavlov Institute of Physiology, Academy of Sciences, USSR, Leningrad

Summary

Th slices were cut with a narrow strip of blade in a special holder. "Krebs artificial serum" and natural blood plasma were used as incubation media. Dynamics of respiration, water and electrolytes distribution in inulin and non-inulin space were measured for 6 hours. The respiration in the media above was more than 200 micromoles of oxygen per gramm per hour, being near the values in vivo. A good steady state of electrolyte distribution was observed in plasma for the whole period, in Krebs serum it continued only for 2—2.5 hours.

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REEL/FRAME
1970847

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USSR

UDC: 621.376:530.145.6

YEMEL'YANOV, N. G., KOBZEV, V. V.

"A Frequency-Polarization Modulator Which Uses ADP and GaAs"

V sb. Poluprovodn. pribory v tekhn. elektrosvyazi (Semiconductor Devices in Electrical Communications Technology--collection of works), Vyp. 5, Moscow, "Svyaz'", 1907, pp 3-11 (from RZh-Radiotekhnika, No 6, Jun 70, Abstract No 6D248)

Translation: A method is described for modulating coherent radiation in the visible and infrared ranges using a Fabry-Perot interferometer, with simultaneous modulation of the frequency of the oscillations and the direction of the polarization plane. It is shown that it is feasible to make combined use of a simultaneous change in both these beam parameters in communication lines in the optical range. Some of the singularities and advantages of this method are considered. Resume.

1/1

Titanium

UDC 621.791.92:042.3:669.295

USSR

MAL'KOV, V. M., Engineer, YEMEL'YANOV, N. P., Candidate of Technical Sciences, and YEMEL'YANOV, N. I., Engineer, Central Scientific Research Institute of the Ministry of Railways

"Influence of Titanium on Surfacing With Powder Wires"

Moscow, Svarochnoye Proizvodstvo, No 2, Feb 71, pp 33-35

Abstract: The welding division of the Central Scientific Research Institute of the Ministry of Railways has developed three types of powdered surfacing wires providing surface metal hardness of HB250, 350, and 500 and increasing surface metal wear resistance by 2-4 times in comparison with type E42 electrodes. These wires provide surfacing of 12.5-28.0 g/a·hr, or 2-19 kg/hr material with currents of 160-700 a. The influence of titanium in the core of the powder wires on their welding technological properties and the content of gases, hardness, wear-resistance, and mechanical properties of the surface metal are studied. The optimal content of titanium, the primary deoxidizer, in the core of the powder wires with the TiO_2-CaF_2-CaO slag system selected is determined.

1/1

1/2 013 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--LEAD ACID BATTERY ELECTRODES -U-

AUTHOR-(05)-YEMELYANOV, N.M., SMOLKOVA, V.S., ROMANOVA, I.L., SELITSKIY, I.A., RUSIN, A.I.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 262,200

REFERENCE--OTDRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,

DATE PUBLISHED--26JAN70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--PATENT, BATTERY ELECTRODE, LEAD, LEAD OXIDE, SULFURIC ACID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/1782 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0109743

UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AA0109743

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE ELECTRODES ARE PREPD. BY MIXING PB OXIDES WITH H SUB2 SO SUB4, SMEARING THE MIST. ONTO A LATTICE, DRYING, FORMING, REPEATED DRYING, AND INTRODUCING A BINDER. THE DRIED OUT PLATES ARE SATD. IN THE BINDER SOLN., WITH SUBSEQUENT REMOVAL OF THE SOLVENT. FACILITY: SCIENTIFIC RESEARCH STORAGE BATTERY INSTITUTE.

UNCLASSIFIED

USSR

UDC 632.95

YEMEL'YANOV, N. P., ROMANOVSKAYA, L. P., Institute of Physical and Organic Chemistry, Academy of Sciences of the BSSR

"A Method of Preparing N-Trichloromethylmercapto 3,6-endoethylenetetrahydro-phthalimide"

USSR Author's Certificate No 255933, filed 25 Nov 67, published 15 Mar 71 (from RZh-Khimiya, No 1(II), Jan 72, Abstract No 1N380)

Translation: N-Trichloromethylmercapto 3,6-endo-ethylenetetrahydrophthalimide (I) is obtained by the reaction of 3,6-endo-ethylenetetrahydrophthalimide (II) with CCl_3SCl (III) in aqueous alkali at ~0°C. Eighty grams of 1,3-cyclohexadiene are added to 98 grams of molten maleic anhydride to give 174.5 g of 3,6-endo-ethylenetetrahydrophthaloanhydride (IV) with mp 122-5°C. By bubbling anhydrous NH_3 into melt IV until water evolution stops, II is synthesized in 94% yield mp 118-20°C. 132.75 g of II is added to 750 ml of a 1 N solution of NaOH; after dissolving, the mixture is cooled to 0°C, 139.5 g of III is rapidly added with stirring, and the mixture is stirred for 2 hours. This yields 164.7 g of I with mp 142-3°C (benzene). Compound I may find application in agriculture. V. P. Kozyukov.

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Titanium

USSR

UDC 621.791.92:042.3:669.295

MAL'KOV, V. M., Engineer, YEMEL'YANOV, N. P., Candidate of Technical Sciences, and YEMEL'YANOV, N. I., Engineer, Central Scientific Research Institute of the Ministry of Railways

"Influence of Titanium on Surfacing With Powder Wires"

Moscow, Svarochnoye Proizvodstvo, No 2, Feb 71, pp 33-35

Abstract: The welding division of the Central Scientific Research Institute of the Ministry of Railways has developed three types of powdered surfacing wires providing surface metal hardness of HB250, 350, and 500 and increasing surface metal wear resistance by 2-4 times in comparison with type E42 electrodes. These wires provide surfacing of 12.5-28.0 g/a·hr, or 2-19 kg/hr material with currents of 160-700 a. The influence of titanium in the core of the powder wires on their welding technological properties and the content of gases, hardness, wear-resistance, and mechanical properties of the surface metal are studied. The optimal content of titanium, the primary deoxidizer, in the core of the powder wires with the TiO_2-CaF_2-CaO slag system selected is determined.

1/1

USSR

UDC 616.981.452-022.39-036.23-078.7(479)

CHERCHENKO, I. I., OGANYAN, Ye. F., YUNDIN, Ye. V., NAYDEN, P. Ye., YEMEL'YANOV, P. F., GOLUBEV, P. D., FILIMONOVA, Yu. A., GONCHAROV, A. I., LABUNETS, N. F., BABAYEV, M. R., ANANYAN, Ye. L., and KHANGULYAN, E. K., Scientific Research Antiplague Institute of the Caucasus and Transcaucasus, and Antiplague Stations, Azerbaydzhan SSR and Armenian SSR

"Experience in Serological Detection of Plague in Rodent Nest Substrate and in Predatory Bird Pellets Under Field Conditions in Natural Foci of the Caucasus"

Moscow, Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii, No 3, 1973, pp 15-20

Abstract: Use of the antibody neutralization reaction (ANR) employing plague antigenic erythrocyte diagnosticum was studied as a serological alternative to detection of plague by bacteriological analysis, for which it is not always possible to gather test material in the field. The study was based on the experimental finding that plague F1 antigen persists in the environment long after an epizootic has subsided. In the first phase, three areas in the Caucasus in which epizootics had been registered previously were studied in 1969-1971. Samples of rodent nest substrate were found to contain F1 antigen by the ANR, whereas bacteriological methods were generally unsuccessful,

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USSR

CHERCHENKO, I. I., et al., Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii, No 3, 1973, pp 15-20

indicating the usefulness of this method for retrospective analysis. In the second phase an area in which epizootics had not been recorded previously was studied in 1970-1971. While the ANR revealed the presence of F1 antigen in rodent nest substrate, bacteriological analysis did not produce such evidence until 4 months later. This result indicated that the method is also preferential for early detection of plague epizootics. In the final phase pellets regurgitated by predatory birds feeding on plague-carrying rodents were subjected to the ANR. Once again F1 antigen was detected in areas without previous epizootic history up to 2 months prior to detection by bacterial analysis. As a control pellets from an area known to be free of plague for 40 years was subjected to the ANR, and the results were negative. Thus the ANR is shown to be a suitable and preferential method for retrospective and early field detection of natural plague foci.

2/2

USSR UDC: 624.075.2

VAN FO FY, G. A. AND YEMEL'YANOV, R. F., Kiev

"Behavior of Thin Cylindrical Shells of Glass-reinforced Plastic Under Longitudinal Compression"

Kiev, Prikladnaya Mekhanika, Vol. 8, No. 1, 1972, pp 17-21

Abstract: Results are presented from an experimental study of the behavior of longitudinally compressed thin cylindrical shells of glass-reinforced plastic of longitudinal-transverse structure under creep conditions at normal temperatures. It is demonstrated that the critical load of the thin shells (R/h = 150) depends on the loading time. The maximum reduction in critical stress is 30-35%.

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USSR

YEMEL'YANOV, R. F.

"Influence of Structure and Geometric Parameters of Cylindrical Shells of Glass-Reinforced Plastic on Load-Bearing Ability in Axial Compression"

4-ya Vses. Konf. po Probl. Ustoychivosti v Stroyit. Mekh., Tezisy Dokl. [Fourth All-Union Conference on Problems of Stability in Structural Mechanics, Theses of Reports -- Collection of Works], Moscow, 1972, pp 124-125, (Translated from Referativnyy Zhurnal, Mekhanika, No 10, 1972, Abstract No 10 V985).

Translation: Results are presented from an experimental study of shells of orthogonally reinforced fiberflass of 1:1 and 1:2 structure, made by the "wet" winding method with subsequent polymerization in an oven. The filler was NS 150/2 (No 75) glass thread, the binder was epoxy-phenol resin. The specimens were tested on a RS 2 ton and RH 30 ton test machine with electronic recording of stress-strain diagrams. The shells were loaded through spherical supports and loading plates, with seating notches to center the shells in relationship to the axis of application of the load. To avoid warping of the ends of the shells, the notches were filled with a cold-curing binder.

1/1

USSR

UDC 621.376:530.145

YEMEL'YANOV, R. G. and KOBZEV, V. V.

"Super-High Frequency Modulator of Light"

Tr. Mosk. in-ta radiotekhn., elektron. i avtomatiki (Works of the Moscow Institute of Radio Engineering, Electronics and Automation), 1972, vyp.55, pp 200-207 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 D206)

Translation: None.

1/1

1/2 018 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--A DEVICE FOR DIFFERENTIATING -U-

AUTHOR-(03)-YEMELYANOV, S.S., KREYNDLIN, I.I., SAVITSKIY, L.G.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. PATENT NO 264006

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI, NO 8,

DATE PUBLISHED-------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--PATENT, PULSE SHAPER, ELECTRIC FILTER, DIFFERENTIATING CIRCUIT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1782 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0130615

UNCLASSIFIED

2/2 018 UNCLASSIFIED

CIRC ACCESSION NO--AA0130615 PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS AUTHOR'S CERTIFICATE INTRODUCES A DEVICE FOR DIFFERENTIATING WHICH CONTAINS A PULSE SHAPER, FILTERS AND A DIFFERENCE UNIT. AS A DISTINGUISHING FEATURE OF THE PATENT, THE DEVICE IS SIMPLIFIED BY CONNECTING THE OUTPUT OF THE INPUT PULSE SHAPER TO THE INPUTS OF TWOFILTERS WITH DIFFERENT FILTRATION TIME CONSTANTS, WHILE THE FILTER OUTPUTS ARE CONNECTED TO THE INPUTS OF THE DIFFERENCE UNIT, THE OUTPUT OF THIS UNIT BEING THE OUTPUT OF THE DEVICE AS A WHOLE.

UNCLASSIFIED

USSR

UDC 681.335.7

YEMEL'YANOV, S. S., KREYNDLIN, I. I., and SAVITSKIY, L. G.

"A Device for Differentiating"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Braztsy, Tovarnyye Znaki, No 8, 1970, p 121, patent No 264006, filed 2 Sep 68

Abstract: This Author's Certificate introduces a device for differentiating which contains a pulse shaper, filters and a difference unit. As a distinguishing feature of the patent, the device is simplified by connecting the output of the input pulse shaper to the inputs of two filters with different filtration time constants, while the filter outputs are connected to the inputs of the difference unit, the output of this unit being the output of the device as a whole.

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USSR

UDC: 53.083.8

YEMEL'YANOV, S. V., Corresponding Member of the USSR Academy of Sciences; MATICH, B. P., Doctor of Technical Sciences; and KOSTYLEVA, N. Ye., Candidate of Technical Sciences

"Universal Unified System for Controlling a Variable Structure, Part 1"

Moscow, Pribory i Sistemy Upravleniya, No 12, 1973, pp 8-17

Abstract: This article is the first installment in a detailed description of SUPS, the transliterated Russian acronym for "system for controlling a variable structure." The system is the result of a decision of the Goskomitet on Science and Technology of the USSR Council of Ministers calling for the cooperation of the Institute of Management Problems and the Yugoslav enterprise "Energoinvest" to cooperate on a solution to the problem of automating the lower hierarchical level in industry. The contract under which the system was developed covered the period of 1969-1973. The documentation for the technical aspects of the system is outlined and the names of the leading designers are given. Also shown are

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USSR

UDC: 53.083.8

YEMEL'YANOV, S. V., et al, Pribory i Sistemy Upravleniya, No 12, 1973, pp 8-17

diagrams of the symbol classification for local control systems and problems of lower hierarchy automation and a full-page block diagram with textual explanation of the SUPS information system. Photographs of some of the units in the system are also supplied, together with explanatory block diagrams. A bibliography of 25 titles is appended.

2/2

USSR

UDC 62-50

YEMEL'YANOV, S.V.; UTKIN, V.I.; TARIN, V.A.; KOSTYLEVA, N.Ye.; SHUBLADZE, A.M.; YEZEROV, V.B.; DUBROVSKIY, Ye.N.

"Theory of Systems with Variable Structure" (book)

Teoriya System s Peremennoy Strukturoy [English version above], Moscow, Nauka Press, 1970, 592 pp

Annotation: This book presents a new division in the theory of automatic control -- the theory of systems with variable structure (VSS) belonging to the class of nonlinear automatic control systems. A broad range of problems is covered. The problems of control of objects with constant and variable parameters in the mode of free motion and with external perturbing forces are studied. Considerable attention is given to solution of the problem of stability of the systems in question. Methods are suggested for controlling objects with many controlled quantities. Methods are presented for synthesis of adaptive systems with variable, simple solutions. The capabilities of methods

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USSR

YEMEL'YANOV, S.V., et al., Teoriya Sistem s Peremennoy Strukturoy, Moscow, Nauka Press, 1970, 592 pp

from the theory of systems with variable structure with incomplete information on the state of the system are studied. Problems related to the application of variable structure systems in problems of filtration are analyzed; a qualitative comparison of linear optimal filters and filters with variable structure is presented.

181 figures; 137 biblio. refs.

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YEMEL'YANOV, S.V., et al., Teoriya Sistem s Peremennoy Strukturoy, Moscow, Nauka Press, 1970, 592 pp

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YEMEL'YANOV, S.V., et al., Teoriya Sistem s Peremennoy Strukturoy, Moscow, Nauka Press, 1970, 592 pp

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YEMEL'YANOV, S.V., et al., Teoriya Sistem s Peremennoy Strukturoy, Moscow, Nauka Press, 1970, 592 pp

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YEMEL'YANOV, S.V., et al., Teoriya Sistem s Peremennoy Strukturoy, Moscow, Nauka Press, 1970, 592 pp

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USSR

YEMEL'YANOV, S.V., et al., Teoriya Sistem s Peremennoy Strukturoy, Moscow, Nauka Press, 1970, 592 pp

USSR

YEMEL'YANOV, S.V., et al., Teoriya Sistem s Peremennoy Strukturoy, Moscow, Nauka Press, 1970, 592 pp

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USSR

YEMEL'YANOV, S. V., DUDIN, Ye. B., DARICHEV, O. I., MALEVICH, A. A., NAPPEL'BAUM, E. L., OZERNOY, V. M.

"Preparation and Making of Decisions in Organizing Control Systems"

Tekhn. Kibernetika. 1969. (Itogi Nauchki i Tekhn) [Engineering Cybernetics, 1969 (Results of Science and Technology), Moscow, 1971, pp 89-184 (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V496 by M. Kazakova).

Translation: This work is a review dedicated to certain problems of the science of control, related to the preparation and making of decisions in organizing control systems. The problem of utilization of expert information, the structural problems of the structure of organization systems and certain procedures for decision making are also studied. The article consists of 5 sections, divided into points, each of which has its own bibliography.

1. Decision making. 1.1. General characteristics of problems of decision making. 1.2. Applications of the theory of usefulness for decision making under conditions of uncertainty and risk. 1.3. Decision making with a vector criterion. 1.4. Collective decisions. 1.5. Decision making in organizational systems (103 Biblio. Refs.). 2. Man-machine decision-making procedures (25 Biblio. Refs.). 3. Application of cost-effectiveness analysis

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YEMEL'YANOV, S. V., DUDIN, Ye. B., DARICHEV, O. I., MALEVICH, A. A., NAPPEL'BAUM, E. L., OZERNOY, V. M., Tekhn. Kibernetika. 1969. (Itogi Nauchki i Tekhn), Moscow, 1971, pp 89-184.

for decision making in one class of systems (7 Biblio. Refs). 4. Methods of production of expert information during preparation and making of decisions. 4.1. Collection and generalization of expert conclusions using the DELFI method. 4.2. The method of V. M. Glushkov. 4.3. The method of rank correlation (10 Biblio. Refs). 5. Some mathematical models of organizational systems (34 Biblio. Refs.).

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YEMEL'YANOV, S. V., UTKIN, V. I., ITKIS, Yu. F., and LEYBOVICH, A. V.

"Centralized Control of a Combination of Dynamic Objects"

USSR Author's Certificate No. 282479, filed 10 Sept 68, published 17 Feb 71 (from RZh-Avtomatika, telemekhanika i vychislitel'naya tekhnika, No. 12, 1971, Abstract No. 12A153P)

Translation: The invention may be used in automatic control of a combination of dynamic objects with varying characteristics: for example, for simultaneous control of the temperature in several zones of multisectional heaters and seasoning ovens. The known method of centralized control of a combination of dynamic objects uses a central regulator of the relay type which is, in turn, connected to each of the controlled objects. In this method, however, the sequence of connections of the controlled objects to the central regulator is inefficient from the viewpoint of rapid action. The proposed method differs in that, at each moment of time, control is exerted only over those objects in which a comparison signal (formed from a signal representing the difference between the object and the derivatives of the signal or the inner coordinates of the object replacing them) has the greatest value of

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corresponding comparison signals for the other objects. This permits increasing the speed of action of the system.